

CLAIMS

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We Claim:

1. An integrated circuit package comprising:
  - an integrated circuit die, said integrated circuit die having a top side and a bottom side opposite said top side, said top side including at least one bond pad;
  - at least one raised interconnect located over and conductively coupled to said at least one bond pad; and,
  - a flexible circuit film located over and conductively attached to said at least one raised interconnect such that an air gap is formed between said integrated circuit die and said flexible circuit film.
2. The integrated circuit package of claim 1 wherein said air gap has a height in the range of between about  $10\mu\text{m}$  to  $500\mu\text{m}$ .  
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3. The integrated circuit package of claim 1 wherein said flexible circuit film is substantially the same size as said integrated circuit die.
4. The integrated circuit package of claim 1 wherein said flexible circuit film has a bottom surface and a top surface, and further comprises at least one inner landing located on said bottom surface interconnected to at least one outer landing located on said top surface, and wherein said flexible circuit film is attached to said at least one raised interconnect at said at least one inner landing.
5. The integrated circuit package of claim 4 wherein said outer landing is offset a horizontal distance from said inner landing, and further wherein said horizontal distance in the range of between about  $50\mu\text{m}$  to  $1,000\mu\text{m}$ .
6. The integrated circuit package of claim 4 further comprising at least one contact bump conductively coupled with said outer landing of said flexible circuit film.
7. The integrated circuit package of claim 1 further comprising an under bump pad formed over said bond pad and conductively coupled to said at least one bond pad and said at least one raised interconnect.

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8. A method for fabricating an integrated circuit package comprising:

providing an integrated circuit wafer, said integrated circuit wafer including a plurality of individual integrated circuit dice, said integrated circuit wafer further having a top surface including a plurality of bond pads which connect to said individual integrated circuit dice and a bottom surface opposite said top surface;

forming raised interconnects over and conductively coupled to said bond pads;

applying a flexible circuit film over said raised interconnects;

conductively attaching said flexible circuit film to said raised interconnects such that an air gap is formed between said flexible circuit film and said integrated circuit wafer;

singulating said integrated circuit wafer into individual integrated circuit packages.

9. The method of claim 8 wherein said air gap has a height in the range of between about <sup>10</sup>1 $\mu$ m to <sup>500</sup>500 $\mu$ m.

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10. The method of claim 8 wherein said flexible circuit film has a bottom surface and a top surface, and further comprises inner landings formed on said bottom surface interconnected to outer landings formed on said top surface, and wherein said flexible circuit film is attached to said raised interconnects at said inner landings.

11. The method of claim 10 wherein said outer landings are offset a horizontal distance from said inner landings, and further wherein said horizontal distance in the range of between about 50 $\mu$ m to 1,000 $\mu$ m.

12. The method of claim 10 further comprising:

forming contact bumps on said outer landings of said flexible circuit film; and,

conductively attaching said contact bumps to said outer landings.

13. The method of claim 10 wherein said flexible circuit film further comprises contact bumps formed on and conductively attached to said outer landings.

14. The method of claim 8 wherein said integrated circuit wafer further comprises under bump pads formed over said bond pads, said under bump pads being conductively coupled between a bond pad and an associated raised interconnect.

15. An integrated circuit wafer having a top side and a bottom side opposite said top side, said integrated circuit wafer comprising:

a plurality of integrated circuit dice, said plurality of integrated circuit dice having a plurality of bond pads located on said top side of said integrated circuit wafer;

a plurality of raised interconnects formed over and conductively coupled to said plurality of bond pads; and,

a flexible circuit film applied over and conductively attached to said plurality of raised interconnects such that an air gap is formed between said integrated circuit wafer and said flexible circuit film.

16. The integrated circuit wafer of claim 15 wherein said air gap has a height in the range of between about  $1\mu\text{m}$  to  $500\mu\text{m}$ .

17. The integrated circuit wafer of claim 15 wherein said integrated circuit wafer further comprises a plurality of under bump pads formed over and conductively coupled to each of said plurality of bond pads.

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18. The integrated circuit wafer of claim 15 wherein said flexible circuit film has a bottom surface and a top surface, and further comprises a plurality of inner landings formed on said bottom surface interconnected to a plurality of outer landings formed on said top surface, and wherein said flexible circuit film is attached to said plurality of raised interconnects at said plurality of inner landings.

19. The integrated circuit wafer of claim 18 wherein each of said plurality of outer landings are offset a horizontal distance from a corresponding one of said inner landings, and further wherein said horizontal distance is in the range of between about  $50\mu\text{m}$  to  $1,000\mu\text{m}$ .

20. The integrated circuit wafer of claim 18 further comprising a plurality of contact bumps formed on and conductively coupled with said outer landings of said flexible circuit film.